climate, just as the meteorologist does his observations of the atmosphere, and both of these students must be very careful about drawing hasty conclusions.

The preceding remarks are perhaps not inappropriate in connection with a letter recently received from our voluntary observer at Birdsnest, Northampton County, Va. In this letter Mr. C. R. Moore states that during the past fifty years the time of planting corn has been put back about a month, and moreover that the certainty of the peach crop has greatly decreased on account of the frequency of early frosts.

Those of our observers who have kept systematic records on this subject would do well to communicate directly with Prof. L. H. Bailey, Ithaca, N. Y., who makes a special study of phenology; meanwhile, we give Mr. Moore's letter in full:

At the request of my old friend, Prof. S. F. Baird, I began keeping the record of the weather in October, 1868, for the Smithsonian, after that for the Signal Service, and now for the Weather Bureau. My reports should all be in possession of the Government, as they were sent regularly on the 1st of each month, except it occurred on Sunday, when we have no mail. The storms are noted in all my reports by an *X* in front of the "Rain column," so that you can readily get them. In regard to the climate, it has materially changed in the last 60 years. When I came here from Philadelphia in 1867 I was told that when some of the older men were boys a man who had not finished corn planting by April Court (1st Monday) was behind. Now, if finished by May Court he is all in good time. This is not a fruit country I am sorry to say, but the old men claim that 60 years ago they had peaches every year. There were no orchards but only fruit for their own use. In 1879 I commenced setting out fruit trees. I have about 2,000, of which about 1,200 are apple trees; 200 peach; 400 plum, the rest pears, cherries, and quinces, and a few apricots. I knew that we did not have a crop of peaches more than once in five years, but I thought the apples especially would do, but they and all the rest are no better. Warm spells in February and March bring out the blossoms, and frosts in April kill them. This year a freeze, April 21 and 22, did much damage. I have never had an apricot. If the peaches blossom before April 15 we are not likely to have many. I have a memorandum of the date in which I saw the first peach blossom commencing with 1869. In 1870 my peach trees were in full bloom January 31 and we had no peaches. All the trees do well enough. You would hardly suppose that from our situation here. My place is on the seaside running east to the sounds and the Atlantic. The peninsula here is about 6 miles wide to the Chesapeake Bay on the west. My house is about one-half mile from the sounds, but we do have the frosts. The extremes of the weather here are: 100° on July 15, 1868, and + 2° on February 5, 1866; 100° on July 17, 1887; 102° on July 18, and + 2° on January, 1893.

PECULIAR MOUNTAIN STORMS.

Mr. Joseph H. Struble, of Uniontown, Pa., latitude 39° 45′ N., longitude 79° 45′ W., sends the following account of local storm phenomena, and the Editor, instead of attempting an explanation, based on too scanty data and too much theory, would lay the subject before his readers in hope that other observers in southwestern Pennsylvania and the neighboring portions of Maryland and West Virginia may contribute their own observations on this subject. Mr. Struble says:

We are located near the base of the Laurel Hill range of the mountain, and what we call eastern or mountain storms frequently occur here; the wind veers from north to east and works south to west. The wind lasts usually about forty-eight hours, and in the winter season nearly always ends in rain. Persons crossing from the eastern side of the mountain say no wind is noticed until coming down from the ridge or mountain top, and the storm rarely ever reaches 6 miles west from the base of the mountain, while along the base the storm may be raging in great fury. The oldest residents here can not give any satisfactory explanation of this strange phenomenon. The ridge of the mountain runs in a northerly and southerly direction. If you can give any correct or satisfactory explanation of the cause of these mountain storms, I will consider it a very great favor.

CIRRUS CLOUDS ON THE NORTHWEST SIDE OF A STORM.

Mr. G. W. Richards, of Maple Plain, Minn., calls attention in the Northwest Weather and Crops for February, 1896, to the fact that in his neighborhood there is generally a considerable storm passing northeastward through Iowa, Illinois, Wisconsin, and Michigan, i. e., on his southeast side, whenever, at his station, the sky is clear in the northwest, but covered with cirrus to the southeast, and when the cirrus clouds are moving from south-southeast to north-northeast, or southwest to northwest, while the surface winds are northerly. A good illustration of this condition occurred between December 17 and 20, 1895, when the cirrus clouds over the southeastern sky moved toward the northeast, while the light station winds blew from west-northwest and northeast. This seems to be equivalent to saying that storm centers have clear weather on their northwest sides beyond the region of cirrus clouds. The fact that the cirri move from southwest to northeast, or from west to east, has been generally held to prove that the storm as a whole drifts along with that upper current, but this view is not yet well established, and the difficulty of theorizing on such complex matters bids us suspend judgment and hope for the time when by an extension of our kite work the Weather Bureau may be able to present *facts* in the shape of a daily map of the conditions prevailing in the cloud region throughout the United States.

MEXICAN CLIMATOLOGICAL DATA.

Through the kind cooperation of Señor Mariano Bárcena, Director, and Señor José Zendejas, vice-director, of the Central Meteorologico-Magnetic Observatory, the monthly summaries of Mexican data are now communicated in manuscript, in advance of their publication in the *Boletin Mensual;* an abstract translated into English measures is here given in continuation of the similar tables published in the MONTHLY WEATHER REVIEW during 1896. The altitudes occasionally differ from those heretofore published, but no reason has been assigned for these changes. The barometric means have not been reduced to standard gravity, but this correction will be given at some future date when the pressures are published on our Chart III.

Mexican data for May, 1897.

Stations.	Altitude.	Mean barometer.	Temperature.			Relative humidity.	Precipitation.	Prevailing direction.	
			Max.	Min.	Mean.			Wind.	Cloud.
	Feet.	*Inch.*	° *F.*	° *F.*	° *F.*	%	*Inch.*		
Aguascallentes	6,119	23.80	85.6	54.3	69.8	39	1.18	ne.	e.
Barousse (Coahuila)	5,413	.....	83.7	54.3	71.2	.....	2.90	.....	.....
Carneros (Coahuila)	.....	.....	81.5	54.1	68.7	.....	1.77	.....	.....
Colima (Seminario)	1,656	28.27	98.1	59.5	80.6	57	1.26	ssw.	sw.
Colima	.....	.....	.....	.....	82.0	.....	.....	.....	.....
Durango	6,241	24.02	88.7	48.2	68.4	37	1.30	.....	w.
Leon	5,934	20.41	91.0	49.6	71.8	40	1.73	wsw.	.....
Linares	1,188	.....	97.7	59.9	75.6	.....	11.65	e.	.....
Magdalena (Sonora)	4,948	.....	90.0	68.0	78.8	.....	0.08	sw.	n.
Merida	50	29.88	101.8	64.8	82.0	62	0.25	ne.	w.
Mexico (Obs. Cent.)	7,472	23.07	84.2	48.0	65.1	49	0.75	ne.	sw.
Monterey	1,626	28.15	99.5	59.0	77.9	65	3.19	ne.	ne.
Morelia (Seminario)	6,401	23.97	84.4	52.5	66.6	48	2.32	ssw.	w.
Oaxaca	5,164	25.05	92.5	50.4	73.2	65	4.96	nw.	ne.
Pachuca	7,956	22.57	84.0	40.1	60.1	49	0.18	nne.	ne.
Parras (Coahuila)	3,986	.....	92.8	63.0	74.5	.....	1.77	.....	.....
Pareta, La. (Coahuila)	.....	.....	100.9	66.6	79.3	.....	2.28	.....	.....
Puebla (Col. Cat.)	7,112	23.38	85.6	50.0	68.5	60	2.06	e.	ne.
Queretaro	6,070	24.17	89.1	51.3	70.2	44	0.61	e.	.....
Saltillo	5,399	24.78	90.5	55.9	69.6	57	1.89	n.	sw.
San Luis Potosi	6,202	24.13	86.0	48.9	67.6	54	0.77	se.	w.
Sierra Mojada (Coah)	.....	.....	89.8	55.6	76.1	.....	0.79	.....	.....
Toluca	8,612	21.91	78.8	43.9	62.2	52	1.10	ne.	.....
Torreon (Coahuila)	3,720	.....	100.9	72.5	84.2	.....	0.89	.....	.....
Vaqueria (Coahuila)	.....	.....	81.5	55.8	64.6	.....	2.36	.....	.....
Zacatecas	8,015	22.52	82.4	43.5	65.5	43	1.72	ne.	s.
Zapotlan (Seminario)	5,078	25.06	91.4	51.6	75.6	41	1.16	sse.	sw.

ANCHOR ICE.

The occurrence of anchor ice in European, and especially in Scotch rivers and lakes, as also in the rivers of New England, has been frequently recorded, but the first instance in our western country is recorded in the January report of the Montana Climate and Crop Service:

A curious phenomenon was witnessed on January 14, 1897, at the Black Eagle Falls of the Missouri River. For several hours the river ceased to flow, leaving the bed of the stream bare. Factories depending on water power were obliged to shut down. The cessation of the flow of water was due to anchor ice. When the temporary obstruction was overcome the water came down with a magnificent rush, leaping several feet over the edge of the dam.

The nature and method of formation of anchor ice, which is also called ground ice or "ground-gru," has not yet been thoroughly investigated, as could easily be done, by laboratory experimentation, but the various hypotheses that have been advanced concerning its formation substantially agree in the idea that we have here a case of water cooled slightly below its freezing point and prevented from freezing by the rapid current of the river; when the eddies and movements of the water cease, or become sluggish, as at the bottom surface or behind any obstacle, then it freezes, and in so doing attaches itself to the obstacle as a nucleus or base which is usually, of course, considerably below the surface of the stream.

THE CHINOOK AND THE SIGNS OF ITS APPROACH.

In the Montana Weather Report for February, 1897, Mr. Coe says:

Generally an aurora is visible from twenty-four to sixty hours prior to the chinook, and a falling barometer is nearly always in evidence. A perfectly calm and a cloudless sky precedes its coming. The smoke from fires ascends perpendicularly, wavering now and then, as if undecided in the direction it should go, or hangs suspended in the motionless air, like a miniature cloud. There is an awesome hush; all nature seems to be resting. The mountains stand out in bold relief against the intensely blue sky, the glistening whiteness of their slopes relieved by the dark green of the pine groves, presenting a lovely view. Suddenly, from each sharp peak a horizontal streamer of snow is seen to unfurl. It is the colors at the front of the advancing host, and mankind in the valleys and plains below exclaim: "The chinook is coming!"

The clouds, which immediately form at the crest of the mountains in the oncoming rush of heated air, are identical in form and color at all times—a huge, billowy mass of vapor, which seems to have been condensed at the summit of the Rockies, and rapidly rolls down the length of the Marias Pass to the plains below, very quickly hiding the mountains from sight. Sometimes the southwest wind comes in a boisterous manner, with rush and roar, chasing the snow in long, drifting lines, but soon moistening it, so that in a few hours it becomes compact and looks as if the hot breath of a flame had passed over it. At other times the atmosphere seems to quiver with heat, and the gentle breeze comes creeping and sighing in light puffs, coquettishly chasing the snow in eddies around projections, and anon tossing it in fanciful shapes on high; eventually the wind increases in force, but never varies the smallest fraction of a degree in its direction. Sometimes, above a considerable tract of country, the chinook blows only at an elevation, and descends many miles to the eastward, even melting the snow on the Sweet Grass Hills (70 miles distant) to some extent, while no change is perceptible at this point. At other times, as at present, a well-defined chinook may be "in sight" on the mountains, and continue so for hours, while the temperature is near the zero mark at this station.

To illustrate this eccentricity of the meteorological phases, I cite the following extremes between two localities, but 38 miles apart: At Kipp, elevation 4,400 feet, time 8:15 p. m. (one hundred and fifth meridian), date February 13, the record is as follows: temperature 6°, wind northwest, clear, snow on ground 7 inches. At Summit, altitude 5,500 feet, a station at the head of the Marias Pass, on the Great Northern Railway, at the same time, the report is: temperature 39, wind southwest, dense clouds, snow on ground 3 feet, melting rapidly; like conditions for the past thirteen hours. At Kipp slight change occurred in temperature until it rose to 40° in twelve minutes at 2:10 p. m., February 15, 1897.

FROST FORMATIONS.

In the American Meteorological Journal for February, 1895, page 387, Vol. XI, there is an exceedingly interesting communication from Mrs. Edson relative to the formation on Roan Mountain, Tenn., of frost needles at the surface of gravelly soil. A physical explanation of the method of formation of the ice columns was given by the Editor in the same journal for April, 1863, Vol. IX, p. 523. The subject is one that lends itself to laboratory experimentation. A peculiar type of the formation is described in the January report of the Alabama section of the Climate and Crop Service, by Mr. Alexander M. Valerio, voluntary observer at Daphne, as follows:

On January 27 the minimum temperature at this station was 14°. The next morning, going down the hillside by my house I noticed, on the dry grass and low brush, what at first sight I took for snow and nearer for bunches of cotton, but which on closer examination I found to be frost work of a very peculiar shape and form, looking very much like fine stick or ribbon candy, or fine venetian glass. These ribbons, beautifully curled and feather-like, came out from the stubs of the plants and, from a sample which I inclose, you will notice the bark was taken off the plants. The width of the frost ribbon was as the length of the cracks in the plant. They looked like fine shavings of a very white wood and crumbled at the touch.

METEOROLOGICAL TABLES.

By A. J. HENRY, Chief of Division of Records and Meteorological Data.

For text descriptive of tables and charts see page 166 of REVIEW for April, 1897.